



CONRAC SAN DIEGO
Photo: Pablo Mason Photography.



Precast Parking Façades

SHOWCASE FORM and FUNCTION

Precast concrete aesthetics are essential for a sense of architectural continuity, creating a positive image for a parking structure

— **Monica Schultes**

Parking structures have an important architectural function. They are the gateway through which customers, visitors, commuters, or employees pass before entering a building. The approach to designing parking structures establishes the tone for a place and gives the first impression of the space.

When real estate costs or site limitations necessitate an elevated parking structure, owners and developers look for cost-effective, engaging, beautiful solutions to support all types of commercial, residential, and municipal parking needs. The increased emphasis on aesthetics is at the forefront of design requirements. The days of plain, gray boxes for cars are over.

Innovative owners and designers are taking advantage of the unlimited design freedom of precast concrete. Colors, textures, and finishes that are available to clad a high-end structure can also be rendered onto the façade of a parking structure. The aggregates, colors, and finishing techniques translate into almost any color, form, or texture specified by the designer.

In today's high-resolution, touch-screen environment, color and texture are paramount to the end user. Texture can express the inherent beauty of natural materials (such as sand and aggregate) or accentuate the relationship to light to create a range of exposure to the sun. Whether subtle or dramatic, these façades capture the desired appearance and design intent.

If a parking structure's location demands the use of brick, stone, or formliners, they can be easily incorporated into a precast concrete panel system to enclose the structure while also serving as a vehicular barrier.

The following parking structure examples feature designs that avoid the flat, heavy spandrels traditionally associated with parking structures, replacing them with a variety of options that provide both exciting form and efficient function.

BLENDING PARKING: HILL CENTER BRENTWOOD PARKING STRUCTURE

A suburb of Nashville, Tenn., Brentwood is one of the wealthiest cities in the United States. So it is no surprise that aesthetics were of preeminent importance in the design of the Hill Center Brentwood mixed-use campus comprising retail and office buildings. Hill Center Brentwood features office space, retail, and dining options in a one-stop shop, work, and play destination.

This first parking structure in the development had to complement the urban/suburban feel of the upscale, mixed-use development. The owner wanted to reimagine and refurbish the existing configuration and incorporate walkability and connectivity to adjacent properties with the new construction.

“Inlaid brick is a favorite in the Brentwood area, so it was used to give a modern feel to the design,” describes JP Cowan, associate principal with TMPartners PLLC. “The owner was open to ideas that would create an attractive garage. We suggested a cascading corbel brick to provide interest to the façade and worked closely with the brick manufacturer and Gate Precast to make sure our design was economically feasible and within budget.”

The parking deck is a six-tier, 873-space, cast-in-place concrete structure clad with precast concrete panels.

Four brick types were used along with three varying precast concrete thicknesses. The varying thickness allowed the architect to create depth along the façade and break up the long elevations. The protruding brick detail features a random pattern that increases in density from the bottom to top of the panels.



HILL CENTER BRENTWOOD PHASE 1.1, GARAGE "D"

LOCATION

Brentwood, Tenn.

DESIGNER

TMPartners, Brentwood, Tenn.;
Cooper Carry, Atlanta, Ga.
(associate architect)

OWNER

H.G. Hill Realty Company, Nashville, Tenn.

ENGINEER

EMC Structural Engineers, Nashville,
Tenn.

CONTRACTOR

Turner Construction, Nashville, Tenn.

PCI-CERTIFIED PRECASTER

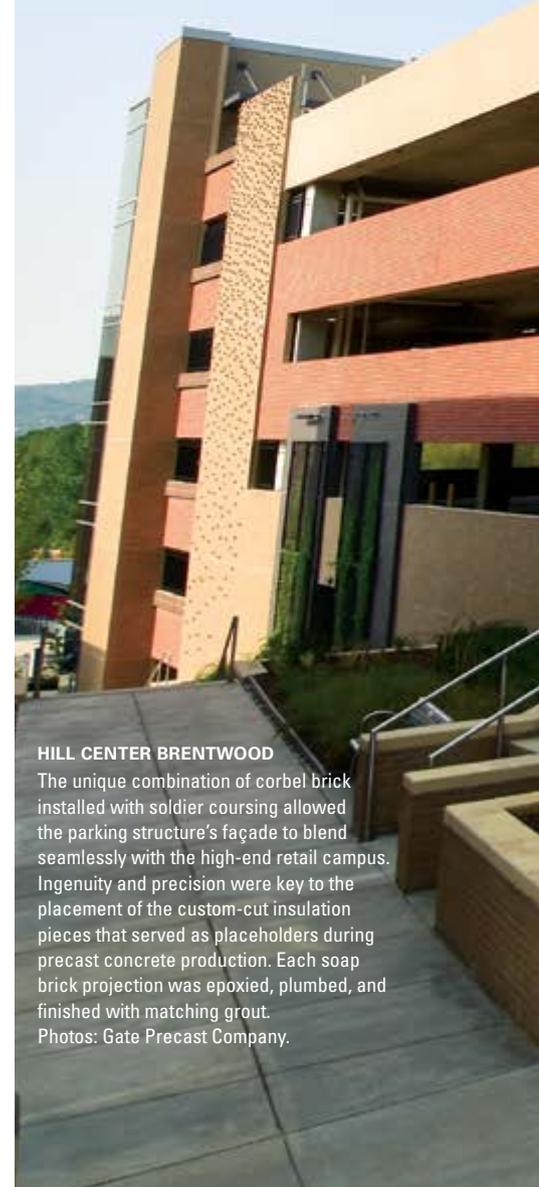
Gate Precast, Ashland City, Tenn.

PCI-CERTIFIED ERECTOR

Ben Hur Construction, Indianapolis, Ind.

PRECAST COMPONENTS

Architectural precast: 27,560 ft² brick, four
unique projected (corbel) brick panels



HILL CENTER BRENTWOOD

The unique combination of corbel brick installed with soldier coursing allowed the parking structure's façade to blend seamlessly with the high-end retail campus. Ingenuity and precision were key to the placement of the custom-cut insulation pieces that served as placeholders during precast concrete production. Each soap brick projection was epoxied, plumbed, and finished with matching grout. Photos: Gate Precast Company.





Photo: Gate Precast Company.

In addition to the unique corbeled brick, each elevation includes precast concrete panels that display soldier coursing for headers and contrasting light and dark brick. Highly detailed precast concrete elevation drawings via building information modeling were paramount in accurately achieving the architect's vision.

One side of the parking structure is adjacent to the office building. Stairs connect the anchor tenants to a landscaped elevated plaza. Cowan explains, "We knew the upper paseo would be a very pedestrian-intensive space and as such we wanted to provide an attractive visual and not just a plain spandrel on that side. We also collaborated with a landscape architect to incorporate a green screen with vines growing up the panels."

"There is variation to the brick with a light stipple that differs from top to bottom. TMAPartners brought their idea to Gate Precast and they developed shop drawings that detailed how they would fabricate it," says Cowan. "They took the idea of the random pattern and ran with it."

A lighting designer was consulted to highlight the three feature panels, including two along the adjacent city street. A large light fixture was installed below and shines upward. The combination of the stipple effect and light fixtures creates unique shadow patterns.

The three glass stair towers were designed to add plenty of light and improve the safety and ease of use. They are also very prominent, promoting the use of stairs as a healthy alternative to taking the elevator.

The response has been favorable and the parking structure blends seamlessly with the high-end shops. The City of Brentwood Planning Commission had to approve the elevations prior to construction. "They would not have agreed to a plain concrete structure, so we knew we would have to provide a fabulous façade," reflects Cowan.

SCENIC VIEW: HIGHWAY 610 AND NOBLE PARKWAY PARK & RIDE

The design of the Park & Ride facility in Brooklyn Park, Minn., creates a striking statement along the Minnesota State Highway 610 corridor. The stark white precast concrete finish was selected because the project is situated next to a highway with high-volume, fast-moving traffic. "We wanted to create a nice-looking parking garage," recalls Tyson McElvain, senior associate/architect at Snow Kreilich Architects. "We wanted to craft something simple, yet bold enough to create a statement along the road."

To reduce headlight glare and deflect light away from adjacent properties, all parking ramps in the region require headlight stops. Given the size of the project, precast concrete was the economical choice. "The precast was economical for its panelized construction, timing, sequence, and potential range of finishes that allowed us to create a unique façade for this garage," explains McElvain.

The design reflects the scale and the view from the highway as well as the horizontal nature of the site. The prairie grass and snow drifts that are commonplace in south central Minnesota were the inspiration for the undulating precast concrete façade panels. "We like to use white; the faceted façade gets a lot of shadow play during the day and throughout the changing seasons. It looks different set against the prairie grasses and fields during the summer and the windswept snow in the winter," describes McElvain.

The subtle transformation of a flat precast concrete panel was achieved by simply pulling two points along the panel's surface.



The pattern is mirrored and rotated so that each panel is different from its neighbor across the random façade. The white was chosen after a lengthy selection process to find the right combination of aggregate and pigment with a light acid etch.

Black precast concrete panels hide the mechanical and storage elements of the parking structure and form the base of the facility, creating a sharp contrast. The dark precast concrete panels are often overlooked, yet they set off the white and create two distinct stripes of snowy ripples. The black panels were achieved using both aggregate and pigment with a heavy acid etch finish.

The two vertical circulation towers are pulled out from the ramp and create beacons along the western façade. “The ramps are separated from circulation of the garage for a few reasons. First is safety: the additional glass provides a passive deterrent against crime and feels more open. Second, the towers help to orient pedestrians and drivers around the garage anywhere on the site. The ramps pulled out from the structure allowed for a cleaner footprint to maximize parking,” clarifies McElvain.

Benches, native plantings, and trees create a public plaza near the bus stop for users to gather around the facility and softens the edges of the site. The north stair tower is slightly enlarged to provide shelter for travelers while they wait for the bus. The combination of real-time signage in the enclosure creates a small community space. The precast concrete benches and planters used in the plaza match the dark color from the parking structure.

McElvain muses that in the future they would like to take advantage of building information modeling software and three-dimensional modeling to push the limits and increase the customization of precast concrete panels. “Rhino or Grasshopper [software] can be quickly programmed to develop iterations and be exported to a robotic arm for fabrication. That is the future of precast concrete façades.”



HIGHWAY 610 AND NOBLE PARKWAY PARK & RIDE FACILITY

LOCATION

Brooklyn Park, Minn.

OWNER

Metropolitan Council (Metro Transit), Minneapolis, Minn.

ARCHITECT

Snow Kreilich Architects, Minneapolis, Minn.

ENGINEER

Stantec, St. Paul, Minn.

CONTRACTOR

Knutson Construction, Minneapolis, Minn.

PCI-CERTIFIED PRECASTER

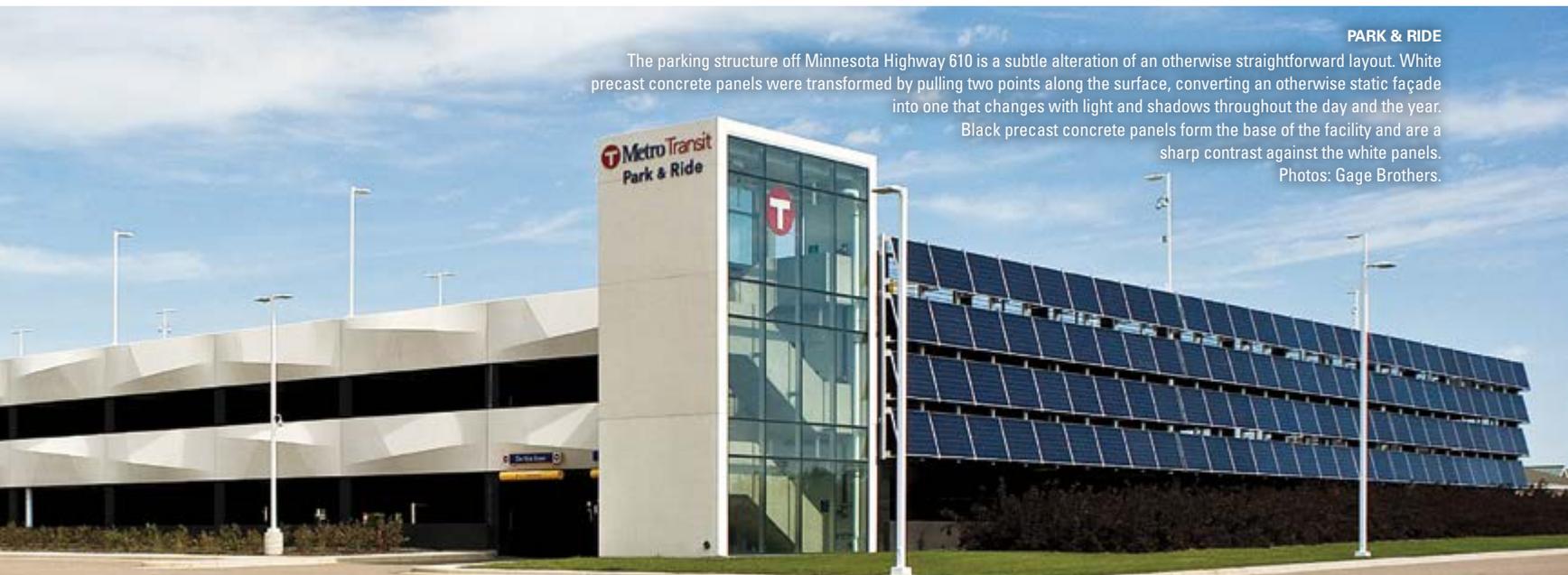
Gage Brothers, Sioux Falls, S.D.

PCI-CERTIFIED ERECTOR

Amerect Inc., Newport, Minn.

PRECAST COMPONENTS

Architectural precast: 64 spandrels, 54 stair tower panels, 41 base panels and infills, 6 seat walls



PARK & RIDE

The parking structure off Minnesota Highway 610 is a subtle alteration of an otherwise straightforward layout. White precast concrete panels were transformed by pulling two points along the surface, converting an otherwise static façade into one that changes with light and shadows throughout the day and the year. Black precast concrete panels form the base of the facility and are a sharp contrast against the white panels. Photos: Gage Brothers.



CONRAC SAN DIEGO

The San Diego airport's consolidated rental car center drive ramps are clad in white helix architectural panels and follow the trajectory of the ramp's corkscrew shape. Panels are trapezoidal in shape and have vertical and horizontal ribs at the back to connect to the spandrels above and below. The panels provide the sculptural look the architect intended, helping to break up the quarter-mile-long structure. Photo: Pablo Mason Photography.

SAN DIEGO INTERNATIONAL AIRPORT CONSOLIDATED RENTAL CAR CENTER

LOCATION
San Diego, Calif.

OWNER
San Diego County Regional Airport, San Diego, Calif.

ARCHITECT
Demattei Wong Architecture, Burlingame, Calif.

ENGINEER
Parsons Brinkerhoff with Kleinfelder Inc., San Diego, Calif.

CONTRACTOR
Austin Sundt Joint Venture, San Diego, Calif.

PCI-CERTIFIED PRECASTER
Clark Pacific, West Sacramento, Calif.

PRECAST COMPONENTS
Architectural precast: 850 total panels, 300 plant assemblies for a total of 1150 pieces

CALIFORNIA COOL: RENTAL CAR FACILITY AT SAN DIEGO INTERNATIONAL AIRPORT

The new 2,000,000-ft² consolidated rental car center (ConRAC) at the San Diego, Calif., international airport is a facility that can house up to 19 rental car companies and 5400 cars. This high-profile project represented a major milestone for the city and its residents. Precast concrete played a key role with its unique cladding solution that satisfied both the public and the airport authority's expectations.

"Our challenge was to take an enormous utilitarian concrete structure—the façade is one quarter mile long—and elevate its typical concrete parking structure appearance by applying architectural treatment to achieve a higher level of aesthetics," says Tony Demattei, president of Demattei Wong Architecture. "The airport was instrumental in pushing for a higher level of exterior finish to represent their perceived result: to provide a state of the art ConRAC facility and to reflect the retail rental car functions within the structure itself."

"The precast offered a high quality of finish and added a consistency that was not achievable with other materials" explains Demattei. "The faceted design itself reflects light which varies during the day and adds a sense of movement to the overall appearance. In addition, LED lighting adds a complementary accent at night and is programmable to achieve any color desired. The lighting accentuates the faceted aspects of the precast façade and gives the overall structure the visual interest and relief that it needs."

The sheer size and scope of the ConRAC piqued public and political attention from the early stages, as a project of this magnitude had not previously been attempted in San Diego.



Furthering the public interest was the rental center's highly visible east border on the airport campus, which increased the rigorous scrutiny.

"The folded panel creates a three-dimensional appearance and avoids the typical flat spandrel, especially because of the length of the building," explains Demattei. The typical spandrel panels are almost 9 ft tall and have a triangular cross-sectional shape. Most



Photo: Pablo Mason Photography.

of these spandrels also received gray crash-wall panels that were plant-assembled before being transported to the jobsite. Clark Pacific also manufactured 80 diamond-shaped infill column cover panels that were attached at the top and bottom to the adjacent spandrel panels. Vehicles enter and exit the parking structure by way of two helical drive ramps that service all four floors of the building. These cast-in-place concrete drive ramps are also clad in white architectural precast concrete spandrel panels.

The ramp panels have a cross section similar to those on the main building; however, these spandrels have to follow the trajectory of the ramp's corkscrew shape. Thus, the helix spandrels have a triangular section that follows a radius with a "twist" built into the profile to follow the ramp as it climbs from floor to floor. The infill wall panels that clad the stair towers and building corners around the perimeter are very complex: trapezoidal in shape with vertical and horizontal ribs at the back to connect to the spandrels above and below.

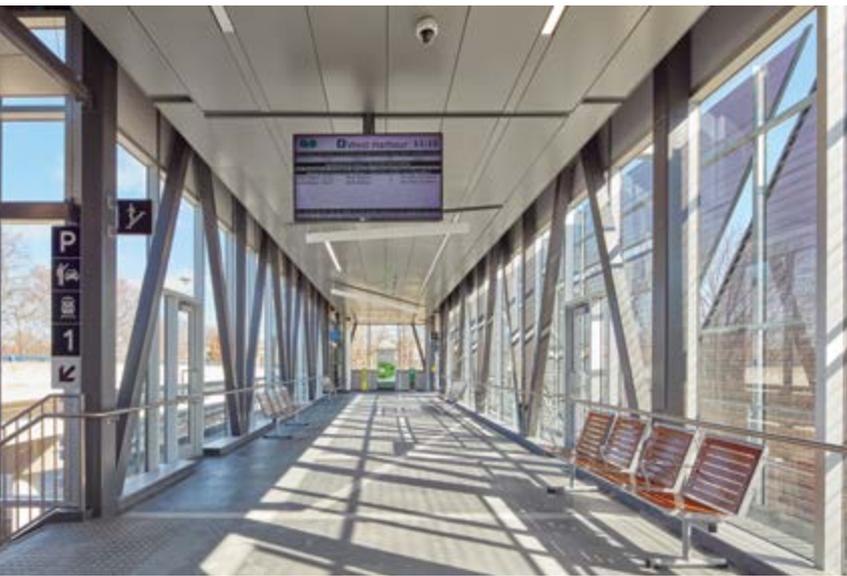
The helical ramps are cantilevered slabs to accentuate the movement of the cars through the facility. At night, the headlight patterns are visible: you see the cars entering on the east side and exiting on the west side. The cantilevered slabs with the folded spandrel panels soften the edges.



Photo: Clark Pacific.

Says Demattei, "With the inherent quality of the precast we came up with a fairly simple façade that had a level of sophistication that provided visual interest, as opposed to a monotonous repetitive structure. Translucent fabric canopies over the arrival and departure plaza tie back to the terminal and relate to the whole airport architecture. The white color precast [white aggregate and heavy sandblast finish] is a contemporary finish mostly designed to refract light."

The articulated precast concrete façade, curved glass storefront entry, tensile fabric canopies, and public art installations provide a striking yet cohesive element at the east border of the airport campus. Additionally, the precast concrete components contributed to the facility's LEED gold certification.



GO TRANSIT

Precast concrete was used throughout the West Harbour GO Transit station's elevated parking deck, and in areas subject to high pedestrian traffic, to minimize risk of damage to the building. By using varying pigments, finishes, and reveal patterns in the precast concrete, the desired architectural language was achieved. The station serves as a landmark for the community, while fitting contextually within the neighborhood. Photos: Studio Shai Gil.

TRANSIT BEAUTY: WEST HARBOUR GO TRANSIT STATION

To kick off the 2015 Pan Am Games and create a gateway to the City of Hamilton, Ontario, Canada, the West Harbour GO Transit station showcases style and substance. The transit project incorporates an urban plaza embellished with landscaped gardens as well as a parking structure. The site is designed as a series of sloped roads, stairways, and gardens punctuated by two tower and bridge structures that connect the streets directly to the platforms. A two-story parking deck clad in precast concrete links the towers, with 140 parking spaces and a "Kiss & Ride" passenger drop-off area.

"Rail stations are founded on passenger flow, so the facility is all about movement," explains Arthur Briggs, manager of architecture with the IBI Group. "We didn't want anything flat or static, and to celebrate movement we used different textures of precast to create animation and poetic repetition in the cladding."

There were concerns about the noise that would be created by buses using the plaza bus lane. To alleviate these concerns, a 7-ft-high precast concrete sound barrier was installed along the south perimeter of the plaza. Rather than using the simple

WEST HARBOUR GO TRANSIT STATION

LOCATION

Hamilton, Ontario, Canada

OWNER

Metrolinx, Toronto, Ontario, Canada

ARCHITECT

IBI Group, Toronto, Ontario, Canada

ENGINEER

IBI Group, Toronto, Ontario, Canada

CONTRACTOR

Kenaidan, Mississauga, Ontario, Canada

PCI-CERTIFIED PRECASTER

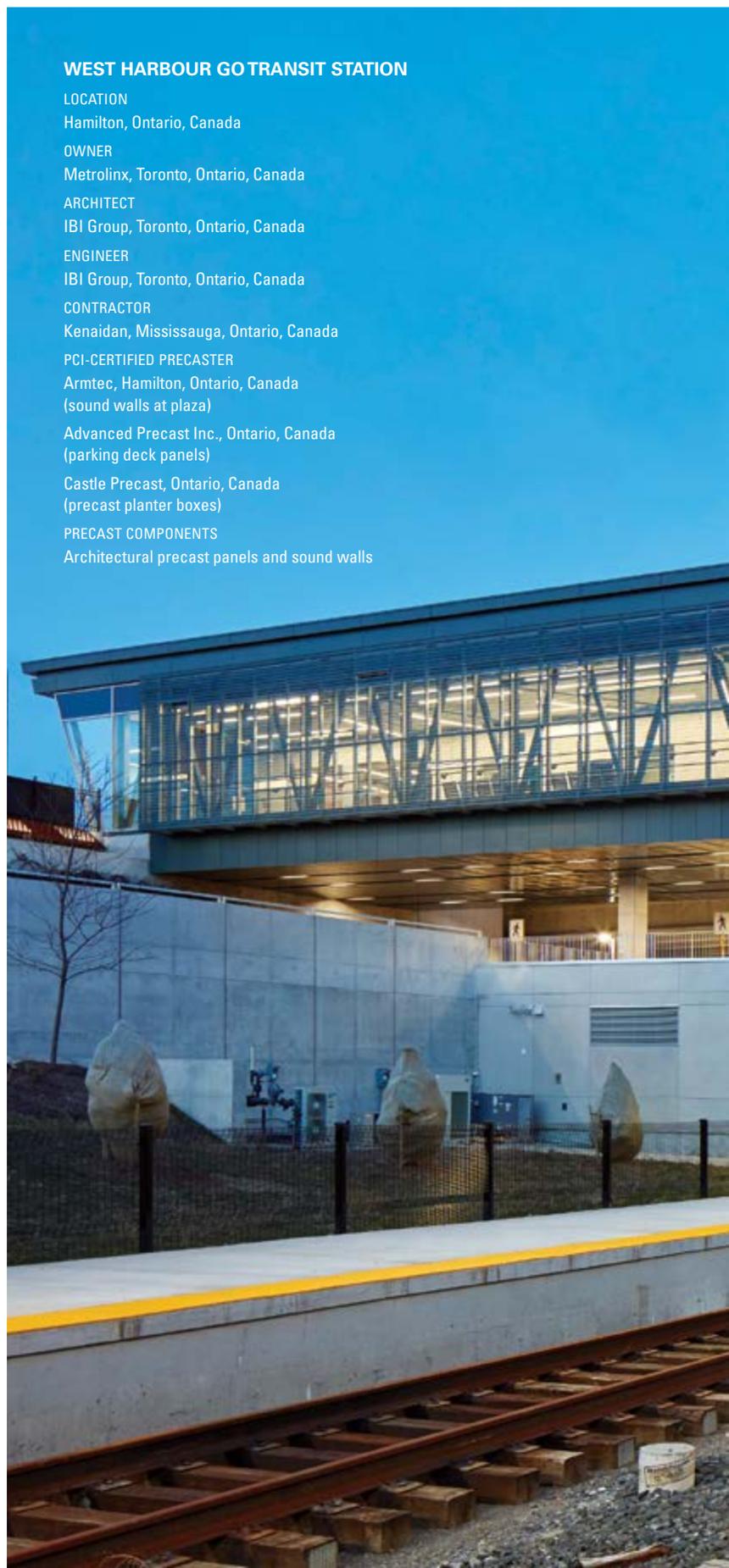
Armtec, Hamilton, Ontario, Canada
(sound walls at plaza)

Advanced Precast Inc., Ontario, Canada
(parking deck panels)

Castle Precast, Ontario, Canada
(precast planter boxes)

PRECAST COMPONENTS

Architectural precast panels and sound walls





precast concrete sound barrier panels typically seen on highways, a custom articulated panel face was used, with overlapping rectilinear forms at various face depths. Staggered linear LED strip lights were recessed within these panels, animating the wall and providing a sense of movement to what could have been a static and utilitarian element of the project.

“We used precast sound walls to line the edge of the project and to delineate the residential portion of the plaza,” explains Briggs. “The LED lights embedded in that wall provide animation to that area and soften the impact to the area residents.”

“Given the grade difference, several retaining walls were integrated into the station design. They serve as multifunctional structures cohesive with the project design, rather than solely utilitarian. Retaining walls from plaza level to platform level were terraced, and serve as planters. A retaining wall between nearby streets provided the opportunity for a stacked parking solution, with the structure serving as the south wall of a two-level parking deck. This concrete retaining wall was clad in charcoal precast panels, alternating between a smooth, sandblast finish and a ribbed panel with 3-in.-deep reveals, mimicking the waterfalls that the city is known for. Precast planter boxes were provided at the

top of this concrete retaining wall, creating an extension of the landscaped boulevard along the street to the south of the project site.”

“Precast concrete was used on the station’s parking deck and in areas subject to high pedestrian traffic to minimize risk of damage to the building. By using varying concrete pigments, finishes and reveal patterns, the desired architectural language was achieved by using this cost-effective and resilient material. The station serves as a landmark for the community, while still fitting contextually within the surrounding neighborhood,” recalls Briggs.

Precast concrete is synonymous with parking structures. Parking structure aesthetics are essential to the sense of architectural continuity critical to the success of a project. Just as architectural panels can benefit an office or residential building, so too can they create a positive identity for a parking structure. These examples illustrate how architectural precast concrete can provide the “wow” factor to complement high-end retail or mixed-use projects, introducing color and texture that transform parking into an architectural statement.

GO TRANSIT
Photo: Studio Shai Gil.

